

Notice of Allowability

Application No.

09/869,107

Examiner

Lisa N. Klaus

Applicant(s)

SUZUKI ET AL.

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 10/18/04.
2. ☒ The allowed claim(s) is/are 70-209.
3. ☒ The drawings filed on 10/18/04 LK ~~17 December 2001~~ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Allowable Subject Matter

1. Applicant's amendments made to the drawings, specification, claims and rejection are deemed to overcome the outstanding office action.
2. Claims 70-209 are allowed.

The following is an examiner's statement of reasons for allowance:

The Prior Art fails to show the micro-machine switch comprising:

- Claims 70 and 72: an electrical insulator between the beam and the intermediate electrode and extending so as to face the gap; the beam is comprised of an electrical conductor extending from the supporter and having such a length that the electrical conductor faces the lower electrode, and electrical insulator extending from a distal end of the electrical conductor and the contact electrode being formed on the electrical insulator in facing relation with the gap.

- Claims 100-171: the micro-machine switch electrically connecting a first signal line formed on a substrate to a second signal line or electrically disconnecting the first signal line from the second signal line, the second signal line being formed on the substrate and having an end spaced away from an end of the first signal line by a certain gap comprising: an electrical insulator making contact with a lower surface of the beam and extending from the beam in a direction in which the beam extends, a contact electrode formed on a surface of the electrical insulator facing the substrate such that the contact electrode faces the gap; the reinforcement formed on the electrical insulator at a side opposite to the contact electrode in alignment with the contact electrode.

- Claims 172-175: a phased-array antenna comprising the phase-shifters includes a micro-machine switch for each of bits; each of data latching circuits is electrically connected to the micro-machine switch of the associated phase-shifter; the controller calculates with N-bit accuracy a degree of phase-shifting optimal for directing a radiated beam towards a desired

direction, based on predetermined location and frequency of the antenna, and transmits the calculation result to each of the data latching circuits through the data distributing circuit, each of the phase-shifters applies a drive voltage to a micro-switch associated with a bit required by each of the phase-shifters, determines a degree of phase-shifting of each of the phase-shifters, alters a phase of a radio-frequency signal in accordance with the thus determine degree of phase-shifting, and supplies electric power to each of antennas; (claims 73, 74, 75) an electrical insulator making contact with a lower surface of said beam, and extending from the beam in a direction in which the beam extends, a contact electrode formed on a surface of the electrical insulator facing the substrate such that the contact electrode faces the gap;

- Claim 176-192, 200-204: a method of fabricating a micro-machine switch comprising the steps of forming the third electrode and a pair of signal lines on a second substrate; etching a substrate at areas except a first area to thereby turn the first area into a raised portion; forming a first and second electrodes on the electrical insulator above the second area; adhering an upper surface of the first area of the substrate onto the second substrate such that the first electrode faces the pair of signal lines and the second electrode faces the third electrodes; removing areas of the substrate except area into which impurities have been diffused; (claim 200) filling the recess with an electrical insulator.

- Claims 193-199 and 205-209: a method of fabricating a micro-machine switch comprising the steps of forming a fifth electrode and a pair of signal lines on a second substrate; adhering upper surface of the first and second areas of the substrate onto the second substrate such that the first electrode faces the pair of signal lines, the second electrode faces the fourth electrode and the third electrode faces the fifth electrode; forming an electrical insulator extending across the third and fifth areas on the substrate, forming the first electrode on the electrical insulator above the third area, forming a second electrode on the electrical insulator

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above a fourth area and further forming a third electrode on the electrical insulator above the fifth area.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication should be directed to Lisa Nhung Klaus whose telephone number is (571)272-1993, and whose fax number is 703-872-9306. In the event that I am not reached, you can contact my supervisor, Mr. Elvin G. Enad at (571)272-1990 or the tech center receptionist at (703) 308-1782.

LK

Lisa Nhung Klaus

Patent Examiner - Art Unit 2832

November 19, 2004


ELVIN ENAD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2000
11/23/04